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K Cooper
1-31-04

Attorney's Docket No. 42390P8695

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	
Borys S. Senyk, et al.	Patent Office: McKinnon, Terrell L.
Serial No. 09/607,871	Art Group: 3743
Filed: June 30, 2000	
For: A METHOD AND APPARATUS FOR COOLING A COMPUTER	

APPEAL BRIEF

Mail Stop Appeal Brief – Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

Applicants, (hereinafter "Appellants") submit, in triplicate, the following Appeal Brief pursuant to 37 C.F.R. § 1.192 for consideration by the Board of Patent Appeals and Interferences. Appellant also submits herewith a check in the amount of $330.00 to cover the cost of filing the opening brief as required by 37 C.F.R. § 1.17(f). Please charge any additional amount due or credit any overpayment to deposit Account No. 02-2666.

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I. REAL PARTY IN INTEREST

Borys S. Senyk and Larry L. Moresco, the parties named in the caption, assigned their rights to the invention disclosed in the subject application through an Assignment recorded on November 27, 2000 at reel and frame 011326/0112 to Intel Corporation of 2200 Mission College Boulevard; Santa Clara, California 95052. Therefore, Intel Corporation is the real party in interest.

II. RELATED APPEALS AND INTERFERENCES

There are no other appeals or interferences that will directly affect or be directly affected by or have a bearing on the Board's decision in this Appeal.

III. STATUS OF CLAIMS

Claims 1-5, 7-13, 15, 17-24 and 26-30 are pending in the application. The Patent Office has rejected claims 1-5, 7-13, 15, 17-24 and 26-30. Appellants appeal the rejection of claims 1-5, 7-13, 15, 17-24 and 26-30.

IV. STATUS OF AMENDMENTS

No amendments to the claims were submitted after the Final Office Action mailed August 20, 2003.

V. SUMMARY

Embodiments relate to a method and apparatus for a cooling system that improves the cooling capacity of a computer system. See Application, page 2, lines 28-30. "The cooling system may include a notebook computer or other suitable portable computer systems." Application, page

2, lines 30-31. "The computer system comprises a tube that is coupled to a first heat transfer plate, which is coupled to a heat-generating element." Application, page 2, line 31 through page 3, line 1. "The tube contains a fluid that removes heat from a heat source transferring it to a heat transfer plate." Application, page 3, lines 1-2. "A second heat transfer plate is also used to transfer the waste heat from the cooling liquid to the ambient cooling air." Application, page 3, lines 2-4.

The tube may be arranged relative to the first heat transfer plate which is disposed in a first part of a computer system and relative to the second heat transfer plate which is disposed in a second part of the computer system. See Application, page 4, lines 7-10. A pump is coupled to the tube and pumps fluid contained in a fluid container through the tube to remove heat from the heat-generating source of the system to the heat transfer plates. See Application, page 4, lines 12-19.

A temperature sensor is coupled to the fluid container, pump and to a power management system. See Application, page 4, lines 24-25. The temperature sensor is able to sense the temperature of the heat-generating element and sends a signal to the power management system when a threshold temperature is detected. See Application, page 25-31. When the signal is received from the temperature sensor, the power management system sends a signal to the pump to begin circulating fluid from the fluid container to the first and second heat transfer plates to cool the heat-generating element. See Application, page 4, line 31 through page 5, line 11.

The system also includes a fluid sensor coupled to the fluid container and power management system. See Application, page 5, lines 12-13. The fluid sensor is configured to detect when the fluid contained within the fluid container reaches a level that requires additional fluid to be added to the fluid container. See Application, page 5, lines 13-15.

VI. ISSUES

The issues involved in this Appeal are as follows:

A. Whether Claims 1-7, 8-16, 18- 25, 27-28 and 30 are obvious under 35 U.S.C. § 103(a) over U.S. Patent No. 5,764,483 issued to Ohashi, et al. ("Ohashi") in view of U.S. Patent No. 6,026,896 issued to Hunter, et al. ("Hunter").

B. Whether Claims 7, 17, 26 and 29 are obvious under 35 U.S.C. § 103(a) over Ohashi in view of Hunter, and further in view of U.S. Patent No. 5,333,676 issued to Mizuno ("Mizuno").

VII. GROUPING OF CLAIMS

All of the claims do not stand or fall together. Rather, Appellants contend that the claims can be divided into the following groups and each group is separately patentable:

Group I - Claims 1-6, 8-10, 23-24, 27-28 and 30

Group II - Claims 7, 26 and 29

Group III- Claims 11-13, 15 and 18-22

Group IV- Claim 17

The basis for the separate patentability of the groups is set forth below.

VIII. ARGUMENT

The Patent Office rejected claims 1-7, 8-16, 18-25, 27-28 and 30 as unpatentable under 35 U.S.C. §103(a) over Ohashi in view of Hunter.

The Patent Office rejected claims 7, 17, 26 and 29 as unpatentable under 35 U.S.C. §103(a) over Ohashi in view of Hunter and in further view of Mizuno.

A. Overview of the Cited References

1. Overview of Ohashi

Ohashi teaches "a cooling unit for electronic equipment suitably used in cooling an electronic circuit board, which is adapted to cool semiconductor devices to maintain a predetermined temperature thereof." Ohashi, Column 1, lines 9-13. "[A] metal box wall is provided as a heat dissipation section and heat generating components and the metal box walls are thermally connected to each other through a thermal transport means having a flexible structure." Ohashi, Column 2, lines 7-11. "The thermal transport means comprises: a flat header member attached to the heat generating components and having an internally formed liquid flow path; a heat dissipation section having a liquid flow path placed in contact with the metal box wall or formed integral with the metal

box wall; and a flexible tube connecting the two portions to each other; and a liquid drive mechanism is provided to effect a liquid vibration or liquid circulation of an internally sealed liquid between the header attached to the heat generating component and the heat dissipation portion." Ohashi, Column 2, lines 11-21.

The heat generating component and the box wall serving as a heat dissipation section are readily connected to each other and heat is transported by driving the liquid through the tube. See Ohashi, Column 2, lines 37-43. Since the heat dissipation member and the metal box wall are thermally connected to each other, heat is diffused into the box wall, cooling a semiconductor device. See Ohashi, Column 2, lines 43-49.

2. Overview of Hunter

Hunter teaches a device relating to "temperature control systems for semiconductor processing equipment." Hunter, Column 1, lines 6-7. More particularly, Hunter's device "relates to heat transfer fluid systems for use in temperature control of various semiconductor processing chambers." Hunter, Column 1, lines 7-10.

Hunter's disclosure "generally provides a system for controlling the temperature of multiple components or devices of semiconductor processing equipment." Hunter, Column 3, lines 30-32. "The multiple process components may be part of the same chamber or process unit, serve different process units in the same or different cluster tool, serve a combination of stand-alone process units and cluster tools, or any combination of process components located in a common fabrication facility." Hunter, Column 3, lines 35-39.

The process components "can be any part of a semiconductor processing device or utility that benefits from heating or cooling, including, but not limited to, the support member or pedestal, process chamber walls, remote plasma sources and cooldown chambers." Hunter, Column 4, lines 40-45. "It should also be recognized that the process 16 can be any type of semiconductor process that benefits from heating or cooling, including, but not limited to, physical vapor deposition, metal

and dielectric chemical vapor deposition, chemical-mechanical polishing, plasma etching and the like." Hunter, Column 4, lines 45-50.

Control valves are operated by temperature controllers which monitor signals coming from temperature sensors that are in thermal communication with the process components. See Hunter, Column 4, lines 51-55. The temperature indicated by the sensor is provided as a signal to a temperature controller by a process controller or computer and is compared with a set-point temperature. See Hunter, Column 4, lines 55-59. When the actual temperature measured by the temperature sensor is different than the set-point temperature, a signal is sent to increase or decrease the opening of a control valve. See Hunter, Column, lines 59-62. Thus, a continuous recycle of fluid circulates through the system. See Hunter, Column, 4, line 62 through Column 5, line 7.

"By providing a continuous recycle of fluid through the manifold, the heated or chilled fluid is immediately available to any process component at the rough temperature." Hunter, Column 5, lines 8-10. "The transportation lag experienced using dedicated heat exchangers is eliminated and each process component can be inexpensively controlled using a simple local temperature controller." Hunter, Column 5, lines 10-14.

3. Overview of Mizuno

Mizuno teaches "a cooling abnormality detection system for external electronic equipment which prevents reliability degradation and breakdown of the electronic equipment due to heat." Mizuno, Column 1, lines 15-18. The system includes "a heat exchanger for performing heat exchange of a liquid coolant supplied from the external electronic equipment, a coolant tank for absorbing expansion of the liquid coolant supplied from the heat exchanger, a pump for circulating the liquid coolant stored in the coolant tank to the external electronic equipment, and a protection unit for detecting a cooling abnormality of the liquid coolant in the electronic equipment" and "a water gauge arranged inside a tank." Mizuno, Column 3, lines 34-41 and Column 4, lines 23-24.

The water gauge detects whether the water level of the tank is low. See Mizuno, Column 4, lines 59-60. If the water level is low, the protection unit drives an abnormality signal line to interrupt the power supply to the electronic components. See Mizuno, Column 5, lines 1-8.

B. Group I: Rejection of Claims 1-6, 8-10, 23-24, 27-28 and 30 Under 35 U.S.C. § 103(a) as Obvious Over Ohashi in View of Hunter

The Patent Office rejected claims 1-6, 8-10, 23-24, 27-28 and 30 of Group I under 35 U.S.C. § 103(a) as being unpatentable over Ohashi in view of Hunter. To establish a *prima facie* case of obviousness, the cited references must teach or suggest each of the claimed limitations, and there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. See MPEP § 2143; see also In re Ray Baeck, 947 F.2d 488; 20 USPQ 2d 1438 (Fed. Cir. 1991). In addition, obviousness cannot be found through hindsight to construct the claimed invention from elements of the prior art. In re Wagner, 379 F.2d 1011, 1016, 154 U.S.P.Q. 173, 177 (C.C.P.A. 1967).

Appellants submit the combination of Ohashi and Hunter fail to teach or suggest each of the elements of the claims in Group I. In addition, Appellants submit there is no suggestion or motivation to combine the teachings of Ohashi and Hunter to read on the claims of Group I.

Representatively, claim 1, among other elements, defines a method comprising causing a fluid to move when a threshold temperature is detected, and circulating the fluid between a first heat transfer plate coupled to an electronic component in a first part of a portable computing device and a second heat transfer plate in a second part of the computing device. Appellants submit the combination of Ohashi and Hunter fails to teach or suggest at least these elements of the claims in Group I.

In making the rejection, the Patent Office characterized Ohashi as showing a cooling unit and method for electronic equipment comprising: coupling a first heat transfer plate (14) to an electronic device (12) and a first part of a portable computing device (10); a second heat transfer

plate (16 and 36) and a second part of the computing device (8) coupled to the first heat transfer plate; a closed loop flexible (plastic, rubber) tube (18) that fluidly joins the first and second heat transfer plates together; the use of a heat transfer medium (water, oil, liquid refrigerant); and the use of a pump (40) coupled to the tube. According to the Patent Office, it would have been obvious to one of ordinary skill in the art at the time of the invention for the pump to circulate the heat transfer fluid at a rate of 1 milliliter/second to 10 milliliter/second to efficiently cool the electronic components. The Patent Office also believed it would be obvious to use a disconnect connection (44A and 44B); a heat transfer plate comprising a plate-fin type liquid heat transfer plate; and to extensively dissipate heat (10 watts to 50 watts) at high capacities from the heat radiating plate. See Paper No. 21, pages 2-3. The Patent Office admitted Ohashi "fails to disclose sensing the temperature of the electronic device and causing the fluid to move when the threshold temperature is detected." Paper No. 21, Page 3.

The Patent Office relied on Hunter to cure the defects of Ohashi. The Patent Office characterized Hunter as teaching "the use of cooling computer enclosures comprising; a temperature sensor probe (36) that senses the temperature of the electronic device, which causes fluid to move when the threshold temperature is detected." Paper No. 21, page 3 (citing Hunter, Column 3, lines 29-35, and Column 4, lines 51-64). Appellants submit that the temperature probe does not cause a fluid to move when a threshold temperature is detected.

Hunter teaches a system in which fluid is continuously flowing through the system to eliminate any transportation lag. See Hunter Column 5, lines 9-14. A valve connected to a tube containing the fluid increases or decreases its opening in response to a signal being sent from a temperature controller. See Hunter Column 4, lines 59-62. A process controller or computer instructs a temperature controller to send the signal to the valve to increase or decrease size in response to a comparison of the actual temperature measured by a temperature sensor to a set-point temperature. Therefore, Hunter cannot teach causing a fluid to move when a threshold temperature is detected since the fluid in Hunter is continuously flowing to prevent transportation lag. Hunter teaches that the continuous flow rate of the fluid may be increased or decreased in response to an

actual temperature being different than the set-point temperature, however, Hunter does not teach or suggest fluid being caused to move when a threshold temperature is detected. Thus, the combination of Ohashi and Hunter fails to teach or suggest each of the elements of the Group I claims.

In addition, Appellants submit there is no motivation or suggestion to combine Ohashi's COOLING UNIT FOR ELECTRONIC EQUIPMENT (laptop) with Hunter's TEMPERATURE CONTROL SYSTEM FOR SEMICONDUCTOR PROCESSING FACILITIES. In Appellants' Response to Office Action mailed July 9, 2003, Appellants discussed the necessary motivation to combine Ohashi with Hunter does not exist since Ohahsi teaches cooling a laptop computer while Hunter discloses "a system for controlling the temperature of multiple components or devices of semiconductor processing equipment." Response to Office Action, dated July 9, 2003, page 6 (citing Hunter, Column 3, lines 29-31).

In response, the Patent Office asserted Hunter "discloses a cooling system for controlling the temperature of multiple components or devices of semiconductor processing equipment" and "it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the cooling unit of Ohashi with a temperature sensor that senses the temperature of the electronic device, and initiates fluid movement when the threshold temperature is detected." Paper No. 21, page 5 (citing Hunter, Column 3, lines 30-40; and Column 4, lines 37-50) and Paper No. 21, page 3, respectively. The Patent Office remarked, "doing so would provide an optimal condition of cooling electronic devices" as the motivation to combine these references. Paper No. 21, page 4.

In addition, the Patent Office alleged, "it would have been very obvious to one of ordinary skill in the art at the time of the invention for Hunter's temperature control system for processing or fabricating semiconductors to have an electromechanical computing device or an electronic computer device for the purpose of precise manufacturing of semiconductors and temperature regulation, as stated in the Abstract." Paper No. 21, page 5. Appellants disagree with the Patent Office.

Hunter teaches a device relating to "temperature control systems for semiconductor processing equipment." Hunter, Column 1, lines 6-7. More particularly, Hunter's device "relates to heat transfer fluid systems for use in temperature control of various semiconductor processing chambers." Hunter, Column 2, lines 7-10. The sections of Hunter cited by the Patent Office teach:

> The system includes a source of a heated or chilled fluid that is distributed to multiple process components for use in heating or cooling of those components. The multiple process components may be part of the same chamber or process unit, serve different process units in the same or different cluster tool, serve a combination of stand alone process units and cluster tools, or any combination of process components located in a common fabrication facility. Hunter, Column 3, lines 32-39.

In addition, process component 14:

> ...can be any part of a semiconductor processing device or utility that benefits from heating or cooling, including, but not limited to, the support member or pedestal, process chamber walls, remote plasma sources and cool down chambers. It should also be recognized that the process 16 can be any type of semiconductor process that benefits from heating or cooling, including, but not limited to, physical vapor deposition, metal and dielectric chemical vapor deposition, chemical-mechanical polishing, plasma etching and the like. Hunter, Column 4, lines 40-50.

Appellants submit the Patent Office engaged in impermissible hindsight in view of Appellants' disclosure by imputing into Hunter cooling down of a computer or similar electronic device when Hunter clearly makes no reference to any such device, but teaches cooling down the tools used to fabricate semiconductor processing equipment. The Patent Office alleged "it would have been very obvious to one of ordinary skill in the art at the time of the invention for Hunter's temperature control system for processing or fabricating semiconductors to have an electro-mechanical computing device or an electronic computer device for the purpose of precise manufacturing of semiconductors and temperature regulation, as stated in the abstract." Paper No. 21, page 5. However, reviewing the Abstract of Hunter shows that the Abstract does not disclose any such electro-mechanical computing device or electronic computer device as alleged by the Patent Office.

In contrast, Appellants submit Hunter explicitly discloses cooling for support members or pedestals, process chamber walls, remote plasma sources and cool down chambers. See Hunter, Column 4, lines 40-45. These devices are not portable computing devices. Appellants have thoroughly reviewed Hunter and submit there is no teaching or suggestion anywhere in Hunter of a computing device capable of being cooled by Hunter's disclosure, let alone a portable computing device. Rather, Hunter teaches cooling the components relating to fabrication or the fabrication facility. See Hunter, Abstract. Thus, Appellants submit the Patent Office has imputed into the reference a teaching that is not implicitly or explicitly disclosed in the reference.

Therefore, since the combination of Ohashi and Hunter fails to teach or suggest each of the elements of the Group I claims, the claims are not obvious over Ohashi in view of Hunter. In addition, the above discussion clearly demonstrates there is no motivation either implicitly or explicitly disclosed within the references to combine Ohashi and Hunter. Thus, Hunter fails to cure the defects of Ohashi.

C. Group II: Rejection of Claims 7, 26 and 29 Under 35 U.S.C. § 103(a) as Obvious Over Ohashi In View of Hunter, and In Further View Of Mizuno

Claims 7, 26 and 29 each depend from independent claims contained within Group I. Therefore, the discussion above regarding Ohashi and Hunter failing to teach each of the elements of the claims in Group I and a lack of suggestion or motivation to combine Ohashi and Hunter is equally applicable to each of the claims in Group II. Thus, Hunter fails to cure the defects of Ohashi. The Patent Office relied on Mizuno to cure the defects of Ohashi and Hunter. Appellants submit Mizuno fails to cure the defects of Ohashi and Hunter.

The Patent Office characterized Mizuno as teaching a cooling system for electronic devices comprising a fluid container (14) coupled to a tube having a sensor (21) for sensing when the fluid is low in a fluid container. See Paper No. 21, page 6. The Patent Office did not cite Mizuno for teaching or suggesting at least causing a fluid to flow when a threshold temperature is detected. In addition, Appellants in their review of Mizuno are unable to discern any sections of Mizuno that

teach or suggest at least causing a fluid to flow when a threshold temperature is detected. Therefore, Mizuno fails to cure the defects of Ohashi and Hunter.

D. Group III: Rejection of Claims 11-13, 15 and 18-22 Under 35 U.S.C. § 103(a) as Obvious Over Ohashi in View of Hunter

The Patent Office rejected claims 11-13, 15 and 18-22 of Group III under 35 U.S.C. § 103(a) as being unpatentable over Ohashi in view of Hunter. To establish a *prima facie* case of obviousness, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. See MPEP § 2143; see also In re Ray Baeck, 947 F.2d 488; 20 USPQ 2d 1438 (Fed. Cir. 1991). In addition, obviousness cannot be found through hindsight to construct a claimed invention from elements of the prior art. In re Wagner, 379 F.2d 1011, 1016, 154 U.S.P.Q. 173, 177 (C.C.P.A. 1967).

Appellants discussed above with regard to Groups I and II, the lack of suggestion or motivation to combine Ohashi's COOLING UNIT FOR ELECTRONIC EQUIPMENT (laptop) with Hunter's TEMPERATURE CONTROL SYSTEM FOR SEMICONDUCTOR PROCESSING FACILITIES to read on the claims of Groups I and II. Similarly, Appellants submit, for the reasons discussed above, there is a lack of suggestion or motivation to combine Ohashi and Hunter to read on the claims of Group III.

E. Group IV: Rejection of Claim 17 Under 35 U.S.C. § 103(a) as Obvious Over Ohashi in View of Hunter, and In Further View of Mizuno

Claim 17 depends from independent claim 11 contained within Group III. Therefore, the discussion above regarding a lack of motivation to combine Ohashi and Hunter is equally applicable to the claim in Group IV. Thus, Hunter fails to cure the defects of Ohashi. The Patent Office relied on Mizuno to cure the defects of Ohashi and Hunter, however, Appellants submit Mizuno fails to cure the defects of Ohashi and Hunter for at least the reasons discussed above.

IX. CONCLUSION AND RELIEF

Accordingly, it is submitted that the rejections of Groups I through IV based on 35 U.S.C. § 103(a) be overturned.

Respectfully submitted,

BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP

Dated: 1/13, 2004

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Nadya Gordon 1/13/04

Nadya Gordon *Date*

X. APPENDIX

The claims involved in this Appeal are as follows:

1. A method comprising:

coupling a first heat transfer plate to an electronic component in a first part of a portable computing device and a second heat transfer plate in a second part of the computing device;

sensing a temperature of the electronic component;

causing a fluid to move when a threshold temperature is detected; and

circulating the fluid between the first heat transfer plate and the second heat transfer plate.

2. The method of claim 1, further comprising:

coupling the first heat transfer plate to a closed loop tube.

3. The method of claim 1, wherein the fluid is one of water, oil, and liquid refrigerant.

4. The method of claim 2, wherein the tube is coupled to a pump.

5. The method of claim 2, further comprising:

coupling a disconnect to the tube.

6. (Canceled)

7. The method of claim 1, further comprising:

sensing the level of fluid in a fluid container.

8. The method of claim 1, further comprising:

removing heat at a rate in the range of about 10 to 50 watts.

9. The method of claim 1, wherein the electronic component is a processor.

10. The method of claim 1, wherein the fluid circulates through the tube at about a rate of 1 milliliters/second to 10 milliliters/second.

11. A heat exchanging system comprising:

a first heat transfer plate coupled to an electronic component located in a first part of a portable computing device and to a second heat transfer plate located in a second part of the portable computing device;

a tube coupling the first heat transfer plate to the second heat transfer plate;

a pump coupled to the tube;

a temperature sensor coupled to the tube and to the pump; and

a fluid for circulating through the first heat transfer plate and the second heat transfer plate.

12. The heat exchanging system of claim 11, wherein the heat transfer plate is coupled to a tube and the closed loop tube.

13. The heat exchanging system of claim 11, wherein the fluid is one of water, oil, and liquid refrigerants.

14. (Canceled)

15. The heat exchanging system of claim 11, further comprising:

a disconnect coupling secured to the tube.

16. (Canceled)

17. The heat exchanging system of claim 11, further comprising a fluid sensor for detecting when fluid is low in a fluid container.

18. The heat exchanging system of claim 11, wherein the heat transfer plate comprises a plate-fin type liquid heat transfer plate.

19. The heat exchanging system of claim 11, wherein heat is removed from the heat exchanging system at a rate of about 10 to 50 watts.

20. The heat exchanging system of claim 11, wherein a tube comprises one of rubber, plastic, aluminum, copper, and stainless steel.

21. The heat exchanging system of claim 11, wherein the electronic component is a processor.

22. The heat exchanging system of claim 11, wherein the fluid circulates through the tube at about a rate of 1 to 10 ml/sec.

23. An apparatus comprising:

a heat generating element disposed in a first part of a portable computing device;

a first heat transfer plate coupled to the heat generating element;

a second heat transfer plate disposed in a second part of the portable computing device;

a tube coupled to the first part and the second part of the portable computing device;

a pump coupled to the tube;

a temperature sensor coupled to the pump and the heat generating element; and

a fluid for circulating through the tube, the first part and the second part of the portable computing device, wherein the temperature sensor causes the fluid to flow in the tube when the temperature reaches a threshold temperature.

24. The apparatus of claim 23, wherein the fluid is one of water, oil, and liquid refrigerants.

25. (Canceled)

26. The apparatus of claim 23, wherein a fluid sensor is coupled to a fluid container.

27. The apparatus of claim 23, further comprising:

a disconnect coupling secured to at least an end of one of the first part and the second part.

28. An apparatus comprising:

a tube disposed in a portable computing device;

the tube coupled to a first heat transfer plate and to a heat generating device;

a pump coupled to the tube;

a temperature sensor coupled to the heat generating device and the pump; and

a fluid for flowing through the tube when the temperature sensor attains a threshold temperature.

29. The apparatus of claim 28, further comprising:

a fluid container coupled to the tube; and

a fluid sensor coupled to the fluid container.

30. The apparatus of claim 28, wherein the tube is disposed in a first part and a second part of the computing device.